

NIAGARA COMBINED POWER PUNCH AND SHEAR.

This is a combination of three machines, which can be used independently, taking care of a large range of work. The shear part is suitable for cutting plates of any length and width, as well as for flat bars up to $\frac{1}{2}$ -inch thick. The punch part is suitable for plates and bars, also for punching holes in the flanges and web of I beams, channels and angles. The center part is intended for cutting off flat and round bars, angles and T bars, and it does this work without deforming the profile.

The machine is driven from T. & L. pulleys, worm and worm wheel, and it has a heavy flywheel. The belt shifter is adjustable for drive at any angle. The worm wheel is entirely enclosed, and runs in an oil bath. The end thrust of the worm is taken up by ball bearings to insure smooth running. A forged steel shaft runs the entire length of the machine, in bronze bearings at the ends, and actuates the pitmans of the three slides. The motion is conveyed to any one of the

slides by shifting the proper engaging wedge between the pitman and this slide. The latter will stop at the highest point after the wedge is withdrawn.

To make the Shear suitable for splitting sheets of any length and width, the frame is made with an offset that allows the free passage of the two parts of the sheet as far as it has been cut, one part going downward, and the other continuing horizontally. The knives are made of solid tool steel and adjustment is provided to take up wear.

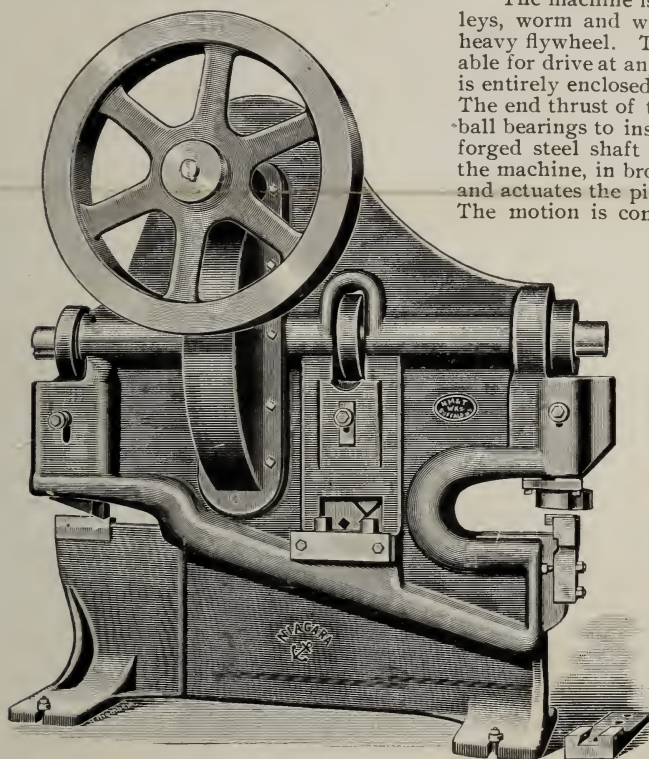
For the punch part we furnish two die holders, one of them

being suitable for punching holes in the web of I beams and channels, and the other is used for punching holes in flanges. Either one of the die holders will answer for plates and flat bars. A stripping attachment is fastened to the frame of the machine.

The center part carries a set of knives that will answer for cutting off square and round bars, as well as for angles and T bars. No exchange of knives is required for these various shapes.

The price includes one standard punch and die for $\frac{1}{2}$ -inch hole.

Will punch to center of.....	inches.	24
Will punch $\frac{3}{4}$ -inch hole through $\frac{1}{2}$ -inch iron, or equivalent		
Length of shear knives.....	inches.	7
Will shear plate iron of any length and width, in thickness up to.....	"	$\frac{1}{2}$
Will shear flat iron in thickness up to	"	$\frac{1}{2}$
Will cut off angles and T bars up to.....	"	3
Will cut off round and square bars up to.....	"	1
Diameter of T. & L. pulleys.....	"	20
Face of " " ".....	"	3 $\frac{1}{2}$
Proportion of gearing.....	"	1 : 25
Speed of pulleys.....	revols.	300
Floor space	inches.	50 x 80
Number of strokes per minute		12
Total height	inches.	75
Weight about.....	lbs.	6400
Price		
Code word.....		Orthol



NIAGARA POWER PUNCHES, No. 130 SERIES.

These machines are arranged for punching small round holes, and can also be used for punching small irregular holes. They are mounted on iron legs. The motion is controlled by a positive clutch actuated by foot treadle.

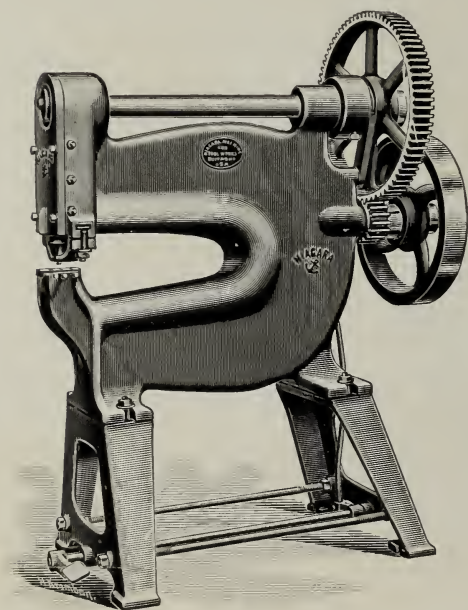
The capacity of the Punches is $\frac{3}{8}$ -inch hole through iron $\frac{3}{8}$ -inch thick, or equivalent. The price includes one die and three punches for holes $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ -inch diameter.

We can furnish Swivel Knife Attachment for use in place of the punches and dies (similar to our Deep Throat Lever Shears). The

knives can be set at any desired angle in relation to the frame, and their position can be changed quickly. The knives are 4 inches long, and each has two cutting edges. Cutting capacity, $\frac{3}{16}$ -inch iron and lighter.

The same machine can be used for punching and shearing alternately, provided the working parts for both classes of work are ordered.

The illustration shows a back geared machine. To increase the speed we can leave off the gearing and substitute a heavier flywheel, 28-inch diameter, 4-inch face, speed 100 revolutions. The gearing is preferable for comparatively heavy stock, as it saves the dies.



NUMBER	135	136
Depth of throat.....inches.	18	24
Stroke	$\frac{1}{2}$	$\frac{1}{2}$
Distance from top of die to slide when up	$1\frac{3}{8}$	$1\frac{3}{8}$
Size of flywheel, if geared.. ..	18×3	18×3
Proportion of gearing.....	$1 : 4\frac{1}{2}$	$1 : 4\frac{1}{2}$
Speed per minute	300	300
Height to top of bed.....inches.	30	30
Height to centre of shaft.....	45	47
Floor space.....	42×30	50×30
Weight	1200	1500
Price for punching only.....	\$150.00	\$175.00
Code word	Ormolu	Ornate
Price for shearing only.....	\$160.00	\$185.00
Code word.....	Ornas	Ornino
Shear chucks and knives to punch, extra.....	\$15.00	\$15.00